# Precision Linear Shafts –One Stepped End-Both Ends Tapped–

NEW Printed in Red

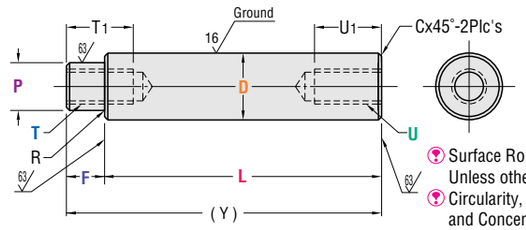
Precision Linear Shafts match most common U.S. standards for O.D. tolerance as well as material, hardness and plating specifications. Case Hardened Steel shafts may be used with typical linear bearing applications.The 440 stainless steel shafts are suitable for cleanroom environment or when introduced to rough conditions such as high humidity or unstable temperatures.

One of our most significant advantages is the ability to designate the shaft length without a cutting charge. Use shaft modifications when additional tolerance control factors, such as more precise length tolerance are required. Additional features like wrench flats can also be selected. Simply add the modification ordering code to the end of the part number.

Price Revision
: New Price

| Material | Heat Treatment | Surface Treatment | Type |
|---|---|---|---|
| Case Hardened Steel | Induction Hardening* 58HRC~ | - | U-SFAA |
| | | Hard Chrome Plating** 750HV | U-PSFAA |
| 440C Stainless Steel | Induction Hardening* 56HRC~ | - | U-SSFAA |

*Hardening Depth and **Plating Thickness P.38
Material Characteristics P.628, 629




Surface Roughness: Unless otherwise specified 250
Circularity, Straightness, Perpendicularity and Concentricity P.38

Length Tolerance P.38

**General Tolerance**
Unless otherwise specified use the table below.

| From | To | Tolerance |
|---|---|---|
| 0.000 | 5.000 | ±0.01 |
| 5.001 | 16.000 | ±0.02 |
| 16.001 | 60.000 | ±0.05 |

Thread or hole location tolerance: ±0.005" non-cumulative.

| Part No. Type | D (Class L) Callout | D (Class L) Nominal | L Choose in 0.01" Increments | P Choose in 0.0005" Increments Diameter | P Tolerance | F Choose in 0.01" Increments | T Thread Selection (Callout) #5-40 | #6-32 | #8-32 | #10-32 | 1/4-20 | 5/16-18 | 3/8-16 | 1/2-13 | 5/8-11 | 3/4-10 | U Thread Selection (Callout) #5-40 | #6-32 | #8-32 | #10-32 | 1/4-20 | 5/16-18 | 3/8-16 | 1/2-13 | 5/8-11 | 3/4-10 | 1-8 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 0.38 | 3/8 | 1.00 ~ 31.90 | 0.2500~0.3125 | -0.0002/-0.0006 | 0.08≤F≤Px4 | 5 | 6 | 8 | | | | | | | | 5 | 6 | 8 | 10 | | | | | | | |
| | 0.50 | 1/2 | 1.00 ~ 35.90 | 0.3125~0.3750 | -0.0002/-0.0006 | 0.08≤F≤Px4 | 5 | 6 | 8 | 10 | 0.25 | | | | | | | 6 | 8 | 10 | 0.25 | | | | | | |
| U-SFAA | 0.63 | 5/8 | 1.00 ~ 35.90 | 0.3750~0.5000 | -0.0002/-0.0006 | 0.08≤F≤Px4 | 5 | 6 | 8 | 10 | 0.25 | 0.31 | | | | | | | 8 | 10 | 0.25 | 0.31 | | | | | |
| U-PSFAA | 0.75 | 3/4 | 1.00 ~ 47.90 | 0.5000~0.6250 | -0.0003/-0.0007 | 0.08≤F≤Px4 | | | 8 | 10 | 0.25 | 0.31 | 0.38 | | | | | | 8 | 10 | 0.25 | 0.31 | 0.38 | | | | |
| U-SSFAA | 1.00 | 1" | 1.00 ~ 47.90 | 0.7500~0.8750 | -0.0003/-0.0008 | 0.08≤F≤Px4 | | | 8 | 10 | 0.25 | 0.31 | 0.38 | 0.50 | 0.63 | | | | 8 | 10 | 0.25 | 0.31 | 0.38 | 0.50 | | | |
| | 1.25 | 1-1/4 | 1.00 ~ 59.90 | 0.7500~1.0000 | -0.0003/-0.0008 | 0.08≤F≤Px4 | | | | | 0.25 | 0.31 | 0.38 | 0.50 | 0.63 | 0.75 | | | | | 0.25 | 0.31 | 0.38 | 0.50 | 0.63 | 0.75 | |
| | 1.50 | 1-1/2 | 1.00 ~ 59.90 | 1.0000~1.2500 | -0.0004/-0.0010 | 0.08≤F≤Px4 | | | | | 0.25 | 0.31 | 0.38 | 0.50 | 0.63 | 0.75 | | | | | 0.38 | 0.50 | 0.63 | 0.75 | 1.00 | | |

The part number consists only of the fields with blue characters.
Please refer to the table below for technical information.

**Order Example**

Part No. — L — P — F — T — U
Type D
U-SFAA 1.00 — L 15.25 — P 0.7500 — F 1.50 — T 0.38 — U 0.50

**Technical Information**

| D Callout | D Nominal | D Tolerance | | C | R | (Y) Max. |
|---|---|---|---|---|---|---|
| 0.38 | 3/8 | 0.3745 | 0.3740 | 0.015 | 0.010 | 32.00 |
| 0.50 | 1/2 | 0.4995 | 0.4990 | 0.015 | 0.010 | 36.00 |
| 0.63 | 5/8 | 0.6245 | 0.6240 | 0.015 | 0.010 | 36.00 |
| 0.75 | 3/4 | 0.7495 | 0.7490 | 0.015 | 0.010 | 48.00 |
| 1.00 | 1" | 0.9995 | 0.9990 | 0.030 | 0.010 | 48.00 |
| 1.25 | 1-1/4 | 1.2495 | 1.2490 | 0.030 | 0.010 | 60.00 |
| 1.50 | 1-1/2 | 1.4994 | 1.4989 | 0.030 | 0.020 | 60.00 |

| T, U (Thread) Callout | Thread Size | Thread Diameter | T1, U1 Thread Depth |
|---|---|---|---|
| 5 | #5-40 | 0.125 | 0.25 |
| 6 | #6-32 | 0.138 | 0.28 |
| 8 | #8-32 | 0.164 | 0.33 |
| 10 | #10-32 | 0.190 | 0.38 |
| 0.25 | 1/4-20 | 0.250 | 0.50 |
| 0.31 | 5/16-18 | 0.313 | 0.63 |
| 0.38 | 3/8-16 | 0.375 | 0.75 |
| 0.50 | 1/2-13 | 0.500 | 1.00 |
| 0.63 | 5/8-11 | 0.625 | 1.25 |
| 0.75 | 3/4-10 | 0.750 | 1.50 |

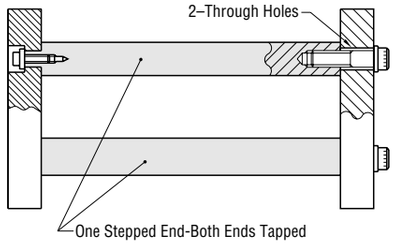
**Selection Criteria:** P≥Thread diameter ( T ) + 0.125, T1 + U1 ≤ Y
When D–P ≤ 0.10, C chamfering will be 0.010 or less.

**Days to Ship**

**Standard**
3 Days — Non-Returnable P.30

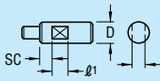
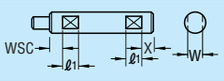
**Express**
1 Day ( Specify Express A ) $ 8.00/piece P.30
A flat charge of $21.60 for 3 or more identical pieces.

**Example**




**Optional Modifications**

Part No. — L — P — F — T — U — (Ordering Code) (WSC, LKC, SC)
Type D
U-SFAA 1.00 — L 15.125 — P 0.7500 — F 1.50 — T 0.38 — U 0.50 — LKC

| Optional Modifications | L Tolerance | Wrench Flats Added | Two Wrench Flats Added |
|---|---|---|---|
| | |   |   |
| Ordering Code | LKC | SC | WSC |
| Details | Example LKC<br>L<20.00 ••• L±0.002<br>L≥20.00 ••• L±0.004<br>Not available for D=P<br>If LKC is used, 0.001" Increments can be specified for length (L) dimension. Please refer to order example. | Example SC0.13<br>Adds wrench flats.<br>SC=0.01" Increments<br>SC+ℓ1≤L<br>SC=0 or SC≥0.05 | Example WSC0.13–X0.13<br>Adds two wrench flats.<br>WSC, X=0.01" Increments<br>WSC+X+ℓ1x2<L<br>WSC=0 or WSC≥0.05<br>X=0 or X≥0.05<br>Positioning of the two wrench flats will not be on the same plane. |
| $ Price Adder | 4.00 | 4.00 | 8.00 |

| D | W Wrench Size | W Actual | ℓ1 |
|---|---|---|---|
| 0.38 | 5/16 | 0.313 | 0.38 |
| 0.50 | 7/16 | 0.438 | 0.38 |
| 0.63 | 1/2 | 0.500 | 0.38 |
| 0.75 | 5/8 | 0.625 | 0.38 |
| 1.00 | 7/8 | 0.875 | 0.38 |
| 1.25 | 1-1/8 | 1.125 | 0.38 |
| 1.50 | 1-3/8 | 1.375 | 0.75 |

When using Optional Modifications, add the "Price Adder" to the standard "Unit Price".

**Price**

**Quantity Discount Rate**

| Quantity | 1 | 2~4 | 5~19 | 20~ |
|---|---|---|---|---|
| Rate | — | 5% | 15% | 20% |

Prices below include Set-Up Charges.
For larger quantity orders "Days to Ship" may differ from published catalog term. P.29

| Part No. Type | D | $ Unit Price Min. L ~ 2.00 | L2.01 ~ 4.00 | L4.01 ~ 6.00 | L6.01 ~ 8.00 | L8.01 ~ 12.00 | L12.01 ~ 16.00 | L16.01 ~ 20.00 | L20.01 ~ 24.00 | L24.01 ~ 32.00 | L32.01 ~ 40.00 | L40.01 ~ 48.00 | L48.01 ~ 60.00 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| U-SFAA | 0.38 | 9.70 | 13.40 | 17.30 | 21.10 | 25.00 | 28.80 | 32.60 | 36.40 | 44.10 | - | - | - |
| | 0.50 | 9.80 | 13.90 | 17.90 | 22.00 | 26.20 | 30.30 | 34.30 | 38.40 | 46.60 | 52.30 | - | - |
| | 0.63 | 10.60 | 15.10 | 19.60 | 24.00 | 28.50 | 33.00 | 37.50 | 42.00 | 50.90 | 55.40 | - | - |
| | 0.75 | 10.70 | 15.30 | 19.90 | 24.50 | 29.20 | 33.80 | 38.40 | 43.00 | 52.30 | 58.60 | 62.00 | - |
| | 1.00 | 17.30 | 23.10 | 28.80 | 34.50 | 40.40 | 46.10 | 51.90 | 57.60 | 69.20 | 80.70 | 92.30 | - |
| | 1.25 | 21.50 | 30.40 | 39.20 | 48.20 | 57.10 | 66.10 | 74.90 | 83.70 | 101.50 | 119.50 | 137.40 | 147.00 |
| | 1.50 | 22.90 | 33.90 | 45.10 | 56.10 | 67.10 | 78.20 | 89.20 | 100.20 | 122.40 | 144.40 | 166.70 | 177.70 |
| U-PSFAA | 0.38 | 10.80 | 16.30 | 21.70 | 27.10 | 32.50 | 37.80 | 43.30 | 48.70 | 59.50 | - | - | - |
| | 0.50 | 11.40 | 16.90 | 22.30 | 27.70 | 33.10 | 38.50 | 44.00 | 49.40 | 60.20 | 76.60 | - | - |
| | 0.63 | 11.80 | 18.30 | 24.60 | 31.10 | 37.60 | 44.10 | 50.60 | 57.00 | 70.00 | 76.50 | - | - |
| | 0.75 | 14.00 | 21.10 | 28.30 | 35.40 | 42.50 | 49.60 | 56.80 | 63.90 | 78.10 | 90.00 | 99.60 | - |
| | 1.00 | 20.60 | 29.20 | 37.70 | 46.30 | 54.90 | 63.50 | 72.10 | 80.60 | 97.70 | 114.80 | 132.00 | - |
| | 1.25 | 25.20 | 36.50 | 47.70 | 59.20 | 70.50 | 81.80 | 93.30 | 104.40 | 126.90 | 149.80 | 172.40 | 184.40 |
| | 1.50 | 26.60 | 39.40 | 52.00 | 64.80 | 77.60 | 90.20 | 103.00 | 115.70 | 141.10 | 166.70 | 192.10 | 204.80 |
| U-SSFAA | 0.38 | 11.20 | 17.80 | 24.40 | 31.00 | 37.60 | 44.20 | 50.80 | 57.40 | 70.60 | - | - | - |
| | 0.50 | 12.10 | 18.60 | 25.10 | 31.60 | 38.10 | 44.40 | 50.90 | 65.90 | 80.70 | 95.70 | - | - |
| | 0.63 | 13.40 | 21.10 | 28.80 | 36.40 | 44.10 | 51.70 | 59.40 | 67.10 | 82.40 | 90.00 | - | - |
| | 0.75 | 16.30 | 24.90 | 33.40 | 42.00 | 50.60 | 59.20 | 67.80 | 76.30 | 93.50 | 107.40 | 117.90 | - |
| | 1.00 | 18.70 | 28.20 | 37.60 | 47.00 | 56.50 | 65.90 | 75.40 | 84.70 | 103.60 | 122.50 | 141.40 | - |
| | 1.25 | 27.90 | 44.70 | 61.40 | 78.10 | 95.20 | 111.70 | 128.60 | 145.20 | 178.60 | 212.50 | 246.10 | 263.20 |
| | 1.50 | 32.80 | 54.50 | 76.20 | 98.00 | 119.70 | 141.50 | 163.10 | 184.90 | 228.40 | 271.80 | 315.40 | 337.00 |





**Related Components**

Linear Bushings P.77

Shaft Supports P.125

Shaft Supports P.128

Shaft Collars P.139

Express Options P.30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www.misumiusa.com E-mail: inquire@misumiusa.com
TEL.1-847-843-9105 FAX.1-847-843-9107 TOLL FREE TEL.1-800-681-7475 TOLL FREE FAX.1-800-681-7402